

tion of methods (or processes) disclosed in this application as relevant to any embodiment of the invention.

[0011] In various example embodiments, the methods (or processes) can be accomplished on the service provider side or on the mobile device side or in any shared way between service provider and mobile device with actions being performed on both sides.

[0012] For various example embodiments, the following is applicable: An apparatus comprising means for performing the method of any of originally filed claims **1-10**, **21-30**, and **46-48**.

[0013] Still other aspects, features, and advantages of the invention are readily apparent from the following detailed description, simply by illustrating a number of particular embodiments and implementations, including the best mode contemplated for carrying out the invention. The invention is also capable of other and different embodiments, and its several details can be modified in various obvious respects, all without departing from the spirit and scope of the invention. Accordingly, the drawings and description are to be regarded as illustrative in nature, and not as restrictive.

BRIEF DESCRIPTION OF THE DRAWINGS

[0014] The embodiments of the invention are illustrated by way of example, and not by way of limitation, in the figures of the accompanying drawings:

[0015] FIG. 1 is a diagram of a system capable of managing polling interval and activity time for communicating notifications from a server to a device, according to an embodiment;

[0016] FIG. 2 is a diagram of the components of a notification platform, according to an embodiment;

[0017] FIG. 3 is a diagram of the components of a notification application, according to an embodiment;

[0018] FIGS. 4 through 6 are flowcharts of various processes for, at least, managing polling interval and activity time for communicating notifications from a server to a device, according to various embodiments;

[0019] FIG. 7 is an illustration of a timing diagram for at least one of the processes in FIGS. 4 through 6, according to an embodiment;

[0020] FIG. 8 is an illustration of a user interface utilized in at least one of the processes in FIGS. 4 through 6, according to an embodiment;

[0021] FIG. 9 is a diagram of hardware that can be used to implement an embodiment of the invention;

[0022] FIG. 10 is a diagram of a chip set that can be used to implement an embodiment of the invention; and

[0023] FIG. 11 is a diagram of a mobile terminal (e.g., handset) that can be used to implement an embodiment of the invention.

DESCRIPTION OF SOME EMBODIMENTS

[0024] Examples of a method, apparatus, and computer program for managing polling interval and activity time for communicating notifications from a server to a device are disclosed. In the following description, for the purposes of explanation, numerous specific details are set forth in order to provide a thorough understanding of the embodiments of the invention. It is apparent, however, to one skilled in the art that the embodiments of the invention may be practiced without these specific details or with an equivalent arrangement. In other instances, well-known structures and devices are shown

in block diagram form in order to avoid unnecessarily obscuring the embodiments of the invention.

[0025] It is noted that notifications, messages, and updates may be used interchangeably to indicate information about an update or a notification, which may be communicated from a server to one or more client devices. Also, a notification may be relevant to one or more applications, software, content items, or the like at the client device, wherein application, software, and content item may be used interchangeably to indicate a target of a notification.

[0026] FIG. 1 is a diagram of a system capable of managing polling interval and activity time for communicating notifications from a server to a device, according to an embodiment. With the prevalence of electronic devices (e.g., mobile phones, laptops, tablets, etc.), users may utilize a variety of these devices and applications for, e.g., online shopping, social networking services (e.g., blogging), content sharing, media upload, media download, media streaming, various account management, or the like. In many cases, software and applications on a device may be individually configured to request and/or receive timely notifications and updates, for instance, via one or more service or content providers. Sometimes the notifications are sent via short message service (SMS) or email messages, which may be inefficient as they may be costly for the service providers (e.g., use of communication bandwidth and resources) and for the users (e.g., use of data services via a communication network), or that the users may not always see the messages in a timely manner. Further, it may be more efficient for service providers to control proper delivery of the notifications by scheduling the transmission of the messages for when the user devices (recipients) may actually be on-line since the user devices sometimes may be off-line. For example, some users may choose to save on the cost of data services by configuring and limiting the times when their devices may be online for receiving update information.

[0027] To address, at least, this problem, a system **100** of FIG. 1 introduces the capability to manage polling intervals and activity times for communicating notifications and updates from a server to one or more devices. In one embodiment, a user device (e.g., a push notification client (PNC)) in the system **100** may register one or more applications at the device with a push notification server (PNS) wherein the PNS, according to a predefined schedule (e.g., daily, weekly, etc.), may forward to the PNC one or more notifications, messages, updates, etc. associated with the applications. In one embodiment, the PNS may determine one or more schedules and communicate the schedules to one or more PNCs.

[0028] In one embodiment, a PNS may receive a request from a PNC for one or more updates, wherein the PNS may determine/generate and return to the PNC one or more parameters associated with one or more schedules for communications between the PNC and PNS where the PNC is to be online (e.g., via a communication channel.) For example, the PNS may transmit/deliver to a PNC one or more notifications, one or more updates, one or more parameters, or the like, which may indicate a polling interval and activity time (e.g., in three days) for the PNC to be online and communicate with the PNS.

[0029] In various embodiments, methods of the system **100** may be advantageous to a service provider, PNS, to better manage the communications of notifications to a plurality of devices, wherein transmissions of the notifications may be scheduled, combined, and reduced in number and thereby